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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/652,503 08/31/00 WILLIAMS

V 4303US (99-0)

EXAMINER

MMC2/0913

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BREWSTER, W

ART UNIT

PAPER NUMBER

2823
DATE MAILED:

09/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/652,503

Applicant(s)

WILLIAMS, VERNON M.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-98 is/are pending in the application.
- 4a) Of the above claim(s) 91-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

Claims 91-9 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 9.

Applicant's election without traverse of claims 1-90 in Paper No. 9 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11, 16-17, 26-36, 41-42, 51-61, 66-67, 76-82, 88 rejected under 35 U.S.C. 102(b) as being anticipated by Sony Corporation, JP Patent No. 6-151492.

Sony anticipates a method of molding a semiconductor assembly in a mold cavity 13 of a transfer mold comprising: in fig. 7, providing an assembly, fig. 3, with carrier substrate and interposer including said at least one substrate, a die 15 with conductive structures protruding therefrom, the leads, having at least one surface in said mold cavity, positioning said at least one substrate substantially vertically; said transfer mold having said at least one cavity substantially vertically oriented, said transfer mold

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including at least one gate 8 at a lower portion of said at least one cavity and at least one vent 7 at an upper portion thereof, and introducing a flowable material 16 onto said at least one substrate of said at least one substrate in a substantially vertical direction in said mold cavity, introducing said flowable material through said at least one gate, until a single flow front of said substantially uniform flow front of flowable material contacts said at least one vent at said upper portion of said at least one cavity, fig. 10 substantially filling said at least one cavity, encapsulating said at least one substrate, substantially preventing voids in said flowable material, USE/ADVANTAGE.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-15, 18-20, 22-23, 37-40, 43-45, 47-48, 62-65, 68-70, 72-73, 83-87 rejected under 35 U.S.C. 103(a) as being unpatentable over Sony in view of Honda et al., U.S. Patent No. 5,471,369.

Sony doesn't specify using positive and negative pressure to move the flowable material. However, the Examiner takes Official notice that using pressure adjustments are well known in the art to move fluids. See M.P.E.P. §2144.03.

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Sony does not teach a large-scale substrate including a plurality of semiconductor devices, but Honda does. Honda teaches in fig. 6A an assembly with said at least one substrate comprising at least one semiconductor die, being connected to a carrier including one of a carrier substrate 6, lead frame 5A, and an interposer 5C, providing a large-scale substrate 3B including a plurality of semiconductor devices, with conductive structures 5C, protruding from bond pads of said plurality of semiconductor devices, with at least one semiconductor die 5A spaced apart from said carrier, introducing resin material between said semiconductor device and said carrier. Honda gives motivation in col. 1, lines 12-18. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Honda's process with Sony's invention would have been beneficial because it provides a single package with multiple chips to downsize the electronic components.

Claims 21, 24, 25, 46, 49, 50, 71, 74, 75, 89, 90 rejected under 35 U.S.C. 103(a) as being unpatentable over Sony in view of Chia et al., U.S. Patent No. 6,081,997.

Sony does not have at least a portion of at least one-cavity preventing covering bond pads of the structures, but Chia does. Chia teaches, in fig. 1, at least a portion of said at least one cavity 28 prevents said flowable material 32 from covering bond pads, using capillary action col. 2, lines 17-27, where cavity at least partially receives protruding structures of said at least one substrate, top of substrate 12, and at least prevents said flowable material from covering said conductive structures. Chia gives motivation in col. 5, line 64 - col. 6, line 24. It would have been obvious to a person of

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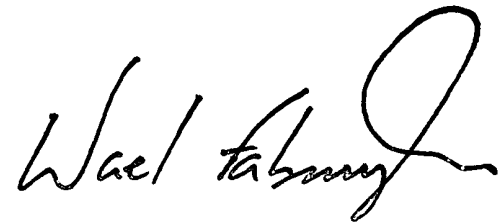
ordinary skill in the art at the time the invention was made to recognize that combining Chia's process with Sony's invention would have been beneficial because the upper wall of second mold section holds the underside surface of substrate 14 against the upper surface of first mold section 20.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 703-305-5906. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

WB
September 10, 2001

A handwritten signature in black ink, appearing to read "Wael Fahmy". The signature is fluid and cursive, with a large loop at the end.

SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2600